UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/894,160	06/27/2001	David J. Metcalfe	XXT-053/D99821	5213

7590 01/24/2005

Patrick R Roche
Fay Sharpe Fagan Minnich & McKee LLP
1100 Superior Avenue 7th Floor
Cleveland, OH 44114-2579

EXAMINER	
THOMPSON, JAMES A	

ART UNIT	PAPER NUMBER
2624	

DATE MAILED: 01/24/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/894,160	METCALFE ET AL.	
	Examiner	Art Unit	
	James A Thompson	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *01 October 2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-11, 13, 15-16 and 36-41 are rejected under 35 U.S.C. 102(b) as being anticipated by Azumaya (US Patent 5,465,307).

Regarding claim 1: Azumaya discloses obtaining content data about a plurality of pixels in an image (column 8, lines 3-5 and lines 43-46 of Azumaya); and grouping pixels having similar content data to form a plurality of line segments (figure 21 and column 14, lines 28-34 of Azumaya). The pixel data is grouped based on the area flags that have been determined (column 14, lines 28-34 of Azumaya), and thus similar content data. As can clearly be seen in figure 21 of Azumaya, said grouping is performed to form a plurality of line segments, such as the line segments shown with area flag #1 and area flag #7 (figure 21(b) of Azumaya).

Azumaya further discloses associating line segments from said plurality of line segments into at least a first window and a second window, wherein said first window and said second window represent similar pixels according to said content data (column 13, lines 39-44 of Azumaya). Content data, specifically the marker flags and texture flags, are used to generate an area flag that is indicative of a closed loop area (column 13, lines

39-44 of Azumaya). There may be more than one closed loop area, but there is at least a first window, namely said closed loop area, and a second window, namely the area outside said closed loop area.

Azumaya further discloses storing information pertaining to said line segments determined during said step of associating (column 13, lines 46-53 of Azumaya), wherein said information associates each line segment with a corresponding window (column 13, lines 39-44 of Azumaya).

Regarding claim 2: Azumaya discloses reading said information stored during said step of storing (column 14, lines 28-30 and lines 35-38 of Azumaya); and assigning a final identifier to each pixel of said plurality of pixels (column 15, lines 49-52 of Azumaya), such that said final identifier corresponds to said information stored during said step of storing (column 15, lines 51-54 of Azumaya).

Regarding claim 3: Azumaya discloses determining a desired output characteristic of at least said first window (column 13, lines 40-41 of Azumaya); and incorporating said desired output characteristic in said information (column 13, lines 40-44 of Azumaya). The desired output characteristic is the closed-loop area.

Regarding claim 4: Azumaya discloses outputting to an output device (column 5, lines 17-20 of Azumaya), said image in the form of said plurality of pixels designated by said final identifiers (column 15, lines 49-54 of Azumaya). Since the status, and thus the corresponding identifiers, determined is the final status, the output image is therefore the plurality of pixels designated by said final identifiers.

Regarding claim 5: Azumaya discloses grouping pixels of only two rows at any one time (figure 21(c) and column 14, lines 25-27 of Azumaya).

Regarding claim 6: Azumaya discloses grouping line segments by searching for a base identifier (column 8, lines 37-44 of Azumaya). The marker flags for each line are used to determine the overall image area that is enclosed by the marker that is detected, and thus searched for (column 8, lines 37-44 of Azumaya).

Regarding claims 7-8: Azumaya discloses assigning a line segment identifier (final status/history) to each of said line segments (column 15, lines 50-54 of Azumaya), wherein said line segment identifier is determined by line segment identifiers of neighboring line segments (column 15, lines 53-58 of Azumaya).

Regarding claim 9: Azumaya discloses that said line segment identifier is similar to line segment identifiers of neighboring line segments formed of similar pixels according to said content data (column 15, lines 53-58 of Azumaya). Said line segment identifier is based on the pattern of the line segment identifiers (status/history) of the surrounding pixels (column 15, lines 53-58 of Azumaya), and thus the neighboring line segments.

Regarding claim 10: Azumaya discloses that said line segment identifiers are compared with other line segment identifiers (column 15, lines 53-58 of Azumaya). Therefore, each of said line segment identifiers must inherently be stored in a single memory location. Further, as is well known in the art, computer memory is organized according to individual addressable memory locations for each element of memory to be

stored. Therefore, each of said line segment identifiers must inherently be stored in a single memory location.

Regarding claim 11: Azumaya discloses processing said information to combine said first window and said second window into a single window if said single window would represent similar pixels according to said content data (figure 24 and column 15, lines 53-62 of Azumaya). The entire area in which there is a particular type of content data is determined using all of the image data (column 15, lines 53-62 of Azumaya). Therefore, for two or more windows, such as shown in the three darkened window portions in figure 24 of Azumaya (column 15, lines 57-64 of Azumaya), if the content data is similar, said windows are determined to be the same area (column 15, lines 53-62 of Azumaya), and thus the same window.

Regarding claim 13: Azumaya discloses that said content data is a pixel tag for each pixel of said plurality of pixels (figure 21(b) and column 14, lines 23-25 and lines 29-34 of Azumaya). Each pixel is tagged with a tag denoting the content data, as shown in figure 21(b) of Azumaya. The pixel tag is tagged on each pixel of the set of pixels in the line segment (column 14, lines 23-25 of Azumaya) and synchronously output with the corresponding pixel (column 14, lines 29-34 of Azumaya).

Regarding claims 15-16: Azumaya discloses assigning an input device, wherein said input device is a scanner (column 4, lines 9-12 of Azumaya).

Regarding claim 36: Azumaya discloses determining a pixel tag corresponding to a pixel content type of a pixel of a first row (figure 17 and column 13, lines 39-44 of Azumaya). A row of pixels (figure 17("nth line") of Azumaya) is read and stored

(column 13, lines 28-31 of Azumaya) and used to determine a pixel tag corresponding to pixel content type (texture) (column 13, lines 39-44 of Azumaya).

Azumaya further discloses determining a pixel identifier (AR flag) based on said pixel tag (column 13, lines 39-44 of Azumaya) and pixel identifiers of neighboring pixels in said first row and in a neighboring second row (figure 21(c) and column 14, lines 20-27 of Azumaya).

Azumaya further discloses forming line segments of neighboring pixels of said first row (figure 21(b) of Azumaya) having common pixel identifiers (column 15, lines 42-50 of Azumaya).

Azumaya further discloses reviewing line segments of said second row and said first row to associate line segments of said second row neighboring line segments of said first row and having common pixel tags (figure 21(c); figure 27(a); and column 16, lines 34-40 of Azumaya).

Regarding claim 37: Azumaya discloses assigning a line segment identifier (final status/history) to each of said line segments (column 15, lines 50-54 of Azumaya), wherein said line segment identifier corresponds to said pixel identifiers (figure 21("#1 AR Flag" and "#7 AR Flag") and column 14, lines 23-27 of Azumaya) of said pixels forming each of said line segment (column 15, lines 54-58 of Azumaya). The final status/history identifier is determined based on the area determination (column 15, lines 54-58 of Azumaya). Said area determination result is given to each pixel (figure 21("#1 AR Flag" and "#7 AR Flag") and column 14, lines 23-27 of Azumaya).

Regarding claim 38: Azumaya discloses storing said line segment identifiers for each of said line segments in said first

row and said second row in a line segment memory (column 15, lines 11-15 of Azumaya). The line segment identifiers are all stored in memory (column 15, lines 11-15 of Azumaya), which can therefore be referred to as the line segment memory.

Regarding claim 39: Azumaya discloses determining a provisional status/history for a line segment (column 15, lines 45-50 of Azumaya) and later updating said status/history (column 15, lines 50-54 of Azumaya). Therefore, said associations of said line segments of said second row neighboring line segments of said first row and having common pixel tags are stored, thus forming an identifier equivalence table. The memory used to store said associations is said identifier equivalence table.

Regarding claim 40: Azumaya discloses performing a base identifier search to group line segments (column 8, lines 37-44 of Azumaya). The marker flags for each line are used to determine the overall image area that is enclosed by the marker that is detected, and thus searched for (column 8, lines 37-44 of Azumaya). Since said base identifier search is performed over the whole image, said base identifier search would therefore update said identifier equivalence table (status/history stored in memory) and associate line segments of at least a third row.

Regarding claim 41: Azumaya discloses processing said identifier equivalence table to assign window labels, wherein each window label is associated with an area of said image having pixels of a common content type (column 8, lines 41-46 of Azumaya).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Azumaya (US Patent 5,465,307) in view of Shope (US Patent 5,047,955).

Regarding claim 14: Azumuya does not disclose expressly that said image is a multiple-page document.

Shope discloses storing and processing a multiple-page document image (column 3, lines 16-19 of Shope).

Azumaya and Shope are combinable because they are from the same field of endeavor, namely digital image data processing. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to process a multiple-page document image, as taught by Shope, in the method taught by Azumaya. The motivation for doing so would have been that every page of a set of pages in a document does not have to be re-rasterized if any changes are made, and thus the marking engine does not have to wait as long in writing out each set of pages (column 3, lines 16-21 of Shope). Therefore, it would have been obvious to combine Shope with Azumaya to obtain the invention as specified in claim 14.

5. Claims 12, 17-20, 22-27 and 29-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azumaya (US Patent 5,465,307) in view of Farber (US Patent 5,978,791).

Regarding claim 17: Azumaya discloses generating a first identifier of a first line segment on a first line on an image (figure 21(a("#1 AR Flag")) and column 14, lines 21-25 of Azumaya) and a second identifier of a second line segment on a second line on said image (figure 21(a("#7 AR Flag")) and column 14, lines 21-25 of Azumaya), wherein said first line and said second line are parallel to a first axis (column 14, lines 23-25 of Azumaya) and said first line segment overlaps said second line segment along said first axis (figure 20 and column 14, lines 9-12 of Azumaya). Said first line and said second line are in the main scan direction (column 14, lines 23-25 of Azumaya) and thus parallel to a first axis.

Azumaya does not disclose expressly comparing said first identifier and said second identifier; and if said first identifier does not equal said second identifier, conducting a base identifier search to determine a base identifier for said first line segment.

Farber discloses comparing a first identifier to a second identifier (column 17, lines 14-16 and lines 19-21 of Farber); and if said first identifier does not equal said second identifier, conducting a base identifier search to determine a base identifier for a corresponding first data element (column 17, lines 28-30 of Farber). A first identifier, referred to as a "True Name" (column 6, lines 6-10 of Farber), is compared with a second identifier (column 17, lines 14-16 and lines 19-21 of Farber). If said first identifier does not equal said second identifier, the search continues until the base identifier of

the first data element is found (column 17, lines 28-30 of Farber).

Azumaya and Farber are combinable because they are from similar problem solving areas, namely data identification tag searching and sorting. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use identifying tags as a means to point to stored data and search for said stored data, as taught by Farber. The first data element of Farber corresponds to said first line segment of Azumaya. The motivation for doing so would have been to improve the design and storage of the system used to store the relevant digital data by allowing the system to only store one copy of any data item (column 3, lines 42-50 of Farber). Therefore, it would have been obvious to combine Farber with Azumaya to obtain the invention as specified in claim 17.

Regarding claim 18: Azumaya discloses processing identifiers for image segments over the entire image (column 14, lines 18-21 of Azumaya). Therefore, the invention of Azumaya will further generate a third identifier of a third line segment on a third line (column 14, lines 18-26 of Azumaya), wherein said third line is parallel to said first axis (main-scanning direction) (column 14, lines 23-25 of Azumaya) and proximate to said second line, similar to as shown in figure 21(a) of Azumaya. Said second line segment overlaps said third line segment along said first axis (figure 20 and column 14, lines 9-12 of Azumaya).

Azumaya does not disclose expressly that if said first identifier does equal said second identifier, comparing said second identifier to said third identifier; and if said second

identifier does not equal said third identifier, conducting a base identifier search for said second line segment.

Farber discloses searching for an identifier ("True Name") throughout a registry (column 17, lines 14-16 and lines 19-21 of Farber) for each of a list of identifiers (column 17, lines 33-37 of Farber). If said first identifier does equal said second identifier, then said second identifier is the next in order to be processed (column 17, lines 33-37 of Farber). Therefore, said second identifier is compared with said third identifier (column 17, lines 14-16 and lines 19-21 of Farber). If said second identifier does not equal said third identifier, the search continues until the base identifier of the second data element is found (column 17, lines 28-30 of Farber).

Azumaya and Farber are combinable because they are from similar problem solving areas, namely data identification tag searching and sorting. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use identifying tags as a means to point to stored data and search for said stored data, as taught by Farber. The second data element of Farber corresponds to said second line segment of Azumaya. The motivation for doing so would have been to improve the design and storage of the system used to store the relevant digital data by allowing the system to only store one copy of any data item (column 3, lines 42-50 of Farber). Therefore, it would have been obvious to combine Farber with Azumaya to obtain the invention as specified in claim 18.

Regarding claim 22: Azumaya discloses that said image is processed every six pixels in the main scan direction and every two pixels in the sub-scan direction for the entire image (column 14, lines 22-27 of Azumaya). Therefore, said image

comprises a plurality of said first scan lines and a plurality of said second scan lines and each of said plurality of said first scan lines and said plurality of said second scan lines are processed (column 14, lines 22-27 of Azumaya).

Regarding claim 25: Azumaya discloses determining a first segment tag (figure 21(a("#1 AR Flag")) and column 14, lines 21-25 of Azumaya) for a first line segment on a first line parallel to a first axis (column 14, lines 23-25 of Azumaya); and writing a first identifier into a first memory location and assigning said first identifier to said first line segment (column 14, lines 28-34 of Azumaya). In order for said first identifier to be assigned to said first line segment (column 14, lines 28-34 of Azumaya), said first identifier must inherently be written to a memory location. Said memory location can be referred to as the first memory location since this is merely a descriptive designation.

Azumaya further discloses determining a second segment tag (figure 21(a("#7 AR Flag")) and column 14, lines 21-25 of Azumaya) for a second line segment on a second line parallel and proximate to said first line (figure 21(a) and column 14, lines 23-25 of Azumaya) wherein said second line segment overlaps a position of said first line segment along said first axis (figure 20 and column 14, lines 9-12 of Azumaya).

Azumaya further discloses that each segment of image data is associated with an area flag (figure 21(a) and column 14, lines 28-34 of Azumaya), and therefore said first identifier must inherently be written to said first memory location and said second identifier must inherently be written to a second memory location. If the first segment tag equals the second segment tag, then the identifier that is written to said second

memory location is the same as the identifier that is written to said first memory location. Therefore, if said first segment tag equals said second segment tag, said first identifier is written to said second memory location. If, however, said first segment tag does not equal said second segment tag, then the identifier that is written to said second memory location is different than the identifier that is written to said first memory location. Therefore, a second identifier is written into a second memory location. Said second identifier is assigned to said second line segment (figure 21(a("#7 AR Flag")) and column 14, lines 28-34 of Azumaya).

Azumaya further discloses reading a first memory location to determine a first memory location content (column 14, lines 28-30 and lines 35-38 of Azumaya).

Azumaya does not disclose expressly pointing to a further memory location corresponding to said first memory location content; if said first memory location content does not point to said first memory location, reading a further memory location content of said further memory location; continuing to point to succeeding memory locations until a memory location content points to its own memory location and designating said memory location as a base identifier; and writing said base identifier to said first memory location.

Farber discloses pointing to a further memory location corresponding to a first memory location content (column 17, lines 19-23 of Farber); if said first memory location content does not point to said first memory location, reading a further memory location content of said further memory location (column 17, lines 28-30 of Farber); continuing to point to succeeding memory locations until a memory location content points to its

own memory location and designating said memory location as a base identifier (column 17, lines 28-30 and lines 37-41 of Farber); and writing said base identifier to said first memory location (column 17, lines 41-45 of Farber).

Azumaya and Farber are combinable because they are from similar problem solving areas, namely data identification tag searching and sorting. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform a search for the base identifier ("True File" data) until the location corresponding to the first identifier ("True Name") is found, as taught by Farber. The motivation for doing so would have been to improve the design and storage of the system used to store the relevant digital data by allowing the system to only store one copy of any data item (column 3, lines 42-50 of Farber). Therefore, it would have been obvious to combine Farber with Azumaya to obtain the invention as specified in claim 25.

Regarding claim 26: Azumaya discloses determining a location of a third line segment (figure 20(580) of Azumaya) by identifying said third line segment on one of said first line and said second line (column 14, lines 9-12 of Azumaya), as contiguous with one of the group of said first line segment and said second line segment (figure 20(c) of Azumaya) extending a lesser distance in a first direction along said first axis such that said third line segment overlaps a position of the other of said group of said first line segment and said second line segment along said first axis (figure 20 and column 14, lines 9-12 of Azumaya). As can clearly be seen in figure 20 of Azumayam, said third line segment (figure 20(580) of Azumaya) is contiguous with the second line segment, extends a lesser

distance in the main-scan direction as the second line segment, and overlaps the first line segment.

Regarding claims 23 and 29: Azumaya discloses that the image data is processed at intervals of a preset number of pixels in the main-scan and a preset number of pixels in the sub-scan directions (column 10, lines 47-54 of Azumaya). Therefore, for a sub-scan sampling length of one pixel, all line segments on said first scan line and all line segments on said second scan line are processed before processing line segments on a different scan line (column 10, lines 47-54 of Azumaya).

Regarding claim 30: Azumaya discloses an apparatus (figure 1 of Azumaya) comprising a memory (figure 4(43) of Azumaya) adapted to store at least one of the group of a first identifier of a first line segment on a first line and a second identifier of a second line segment on a second line (column 14, lines 29-34 of Azumaya); and a processor (figure 1(214) of Azumaya) coupled to said memory and adapted to determine a first segment tag for said first line (column 14, lines 28-34 of Azumaya). Since said memory (figure 4(43) of Azumaya) is a part of the color circuit (figure 1(204) and column 14, lines 30-32 of Azumaya) and said color circuit is a part of said processor (as shown in figure 1 of Azumaya), said processor is coupled to said memory.

Azumaya further discloses that said first line and said second line are parallel to a first axis (column 14, lines 23-25 of Azumaya) and said first line segment overlaps said second line segment (figure 20 and column 14, lines 9-12 of Azumaya). Said first line and said second line are in the main scan direction (column 14, lines 23-25 of Azumaya) and thus parallel to a first axis.

Azumaya does not disclose expressly that said processor is adapted to compare said first identifier to said second identifier, determine that said first line segment is eligible for a base identifier search if said first identifier does not equal said second identifier and conduct a base identifier search for said first line segment.

Farber discloses comparing a first identifier to a second identifier (column 17, lines 14-16 and lines 19-21 of Farber); and if said first identifier does not equal said second identifier, conducting a base identifier search to determine a base identifier for a corresponding first data element (column 17, lines 28-30 of Farber). A first identifier, referred to as a "True Name" (column 6, lines 6-10 of Farber), is compared with a second identifier, specifically the first entry in the True File Registry (column 17, lines 14-16 and lines 19-21 of Farber). If said first identifier do not match, the search continues until the base identifier of the first data element is found (column 17, lines 28-30 of Farber).

Azumaya and Farber are combinable because they are from similar problem solving areas, namely data identification tag searching and sorting. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use identifying tags as a means to point to stored data and search for said stored data, as taught by Farber. The first data element of Farber corresponds to said first line segment of Azumaya. The motivation for doing so would have been to improve the design and storage of the system used to store the relevant digital data by allowing the system to only store one copy of any data item (column 3, lines 42-50 of Farber). Therefore, it

would have been obvious to combine Farber with Azumaya to obtain the invention as specified in claim 30.

Regarding claims 12, 19 and 31: Azumaya discloses reading a first memory location to determine a first memory location content (column 14, lines 28-30 and lines 35-38 of Azumaya).

Azumaya does not disclose expressly pointing to a further memory location corresponding to said first memory location content; if said first memory location content does not point to said first memory location, reading a further memory location content of said further memory location; continuing to point to succeeding memory locations until a memory location content points to its own memory location and designating said memory location as a base identifier; and writing said base identifier to said first memory location.

Farber discloses pointing to a further memory location corresponding to a first memory location content (column 17, lines 19-23 of Farber); if said first memory location content does not point to said first memory location, reading a further memory location content of said further memory location (column 17, lines 28-30 of Farber); continuing to point to succeeding memory locations until a memory location content points to its own memory location and designating said memory location as a base identifier (column 17, lines 28-30 and lines 37-41 of Farber); and writing said base identifier to said first memory location (column 17, lines 41-45 of Farber).

Azumaya and Farber are combinable because they are from similar problem solving areas, namely data identification tag searching and sorting. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to perform a search for the base identifier ("True File" data)

until the location corresponding to the first identifier ("True Name") is found, as taught by Farber. The motivation for doing so would have been to improve the design and storage of the system used to store the relevant digital data by allowing the system to only store one copy of any data item (column 3, lines 42-50 of Farber). Therefore, it would have been obvious to combine Farber with Azumaya to obtain the invention as specified in claims 12, 19 and 31.

Regarding claims 20, 27 and 33: Azumaya discloses that said first line segment (figure 21(a("#1 AR Flag")) of Azumaya) and said second line segment (figure 21(a("#1 AR Flag")) of Azumaya) are contiguous, as is clearly demonstrated in figure 21(a) of Azumaya.

Regarding claims 24 and 32: Azumaya discloses processing the overall image by sampling the image data in blocks of six pixels in the main-scan direction and two pixels in the sub-scan direction (column 14, lines 18-21 of Azumaya). The first line is therefore the first line of the block and the second line is the second line of the block. Since said blocks are processed throughout the entire image, a first scan line of a page of said image data is said first line and a last scan line of said page of said image data is said second line and all remaining scan lines of said page of said image are selectively, alternatively designated as said first line and said second line during processing (column 14, lines 18-27 of Azumaya).

Regarding claims 34-35: Azumaya discloses assigning an input device, wherein said input device is a scanner (column 4, lines 9-12 of Azumaya).

6. Claims 21 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Azumaya (US Patent 5,465,307) in view of Farber (US Patent 5,978,791) as applied to claims 17 and 25 above, respectively, and further in view of Holcomb (US Patent 5,790,133).

Regarding claims 21 and 28: Azumaya in view of Farber does not disclose expressly that said first identifier is stored in a first side of a ping pong memory and said second identifier is stored in a second side of a ping pong memory.

Holcomb discloses using ping pong memory to store two parts of memory data (figure 4(42,44) of Holcomb), one in each side of said ping pong memory (column 4, lines 52-59 of Holcomb).

Azumaya in view of Farber is combinable with Holcomb because they are from similar problem solving areas, namely the storage of multiple units of data. At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use ping pong memory to store two elements of memory, a first memory element on one side of said ping pong memory, and a second memory element on the other side of said ping pong memory, as taught by Holcomb. Said first memory element would therefore correspond to said first identifier and said second memory element would correspond to said second identifier. The motivation for doing so would have been to speed up the memory read/write operations (column 4, lines 58-61 of Holcomb). Therefore, it would have been obvious to combine Holcomb with Azumaya in view of Farber to obtain the invention as specified in claims 21 and 28.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James A Thompson whose telephone number is 703-305-6329. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David K Moore can be reached on 703-308-7452. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James A. Thompson
Examiner
Art Unit 2624

JAT
17 January 2005

THOMAS D. LEE
PRIMARY EXAMINER